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EXAMINER

KESSLER, CHRISTOPHER S

ART UNIT	PAPER NUMBER
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1733

NOTIFICATION DATE	DELIVERY MODE
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07/28/2011

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

pto.phil@dlapiper.com

Office Action Summary	Application No. 10/573,277	Applicant(s) YAMAZAKI ET AL.	
	Examiner CHRISTOPHER KESSLER	Art Unit 1733	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 May 2011.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 7-9 and 15-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 7-9 and 15-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Status of Claims

1. Responsive to the amendment filed 19 May 2011, claims 7, 9, and 15 are amended. Claims 7-9 and 15-17 are currently under examination.

Status of Previous Rejections

2. Responsive to the amendment filed 19 May 2011, new grounds of rejection are presented.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 7-9 and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 2003/0051782 A1 (hereinafter "Toyooka '782").

Regarding claim 7, the terms "expandable" and "oil country" are statements of intended use for the pipe claimed. The claim preamble must be read in the context of the entire claim. The determination of whether preamble recitations are structural limitations or mere statements of purpose or use "can be resolved only on review of the entirety of the [record] to gain an understanding of what the inventors actually invented and intended to encompass by the claim." *Corning Glass Works*, 868 F.2d at 1257, 9

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USPQ2d at 1966. If the body of a claim fully and intrinsically sets forth all of the limitations of the claimed invention, and the preamble merely states, for example, the purpose or intended use of the invention, rather than any distinct definition of any of the claimed invention's limitations, then the preamble is not considered a limitation and is of no significance to claim construction. *Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1305, 51 USPQ2d 1161, 1165 (Fed. Cir. 1999). In the instant case, the terms do not describe a particular structure in the article as claimed. Also, one of ordinary skill in the art would have recognized the utility for seamless steel pipes without an explicit description of said utility

Toyooka '782 teaches the invention substantially as claimed. Toyooka '782 teaches a steel tube having good strength and a yield ratio of no higher than 80% (see [0021]). Toyooka '782 envisions a ERW pipe (see EXAMPLES), however, Toyooka '782 further teaches that the steel pipe may be a seamless steel pipe as is known in the art (see col. [0021] or [0049]). It would have been obvious to one of ordinary skill in the art at time of invention to have made a seamless tube because Toyooka '782 teaches that seamless processing is one suitable means for formation of the pipe (see [0049]).

Toyooka '782 teaches that the tube comprises 0.05-0.30% C, 0.01-2.0% Si, 1.8-4.0% Mn and 0.005-0.10% Al (see [0009] or [0022]-[0030]). Toyooka '782 further teaches that the composition may include Cr up to 2% or Mo up to 1% (see col. 7). Toyooka '782 further teaches that the impurities are limited to maximum amounts of 0.010% of N, 0.006% of O, 0.025% of P and 0.02% of S (see [0038]-[0046]). Toyooka '782 further teaches that the composition may include Cr at no more than 2%, Mo at no

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more than 1%, and Nb at 0.005-0.05% (see [0031]-[0035]). The compositional ranges of the steel of Toyooka '782 overlap the instantly claimed compositional ranges, establishing a prima facie case of obviousness. It would have been obvious to one of ordinary skill in the art at time of invention to have selected a composition within the range as claimed, because Toyooka '782 teaches the same utility over an overlapping range. Applicant is further directed to MPEP 2144.05.

Additionally, Toyooka '782 teaches a specific example of a steel with composition falling within the claimed compositional range (Steel No. B in Table 1). The composition of Toyooka '782 is compared with the claimed composition in the chart below (all values in mass or weight percent).

Element	Claim 1	Toyooka '782 (broad alloy)	Toyooka '782 (Alloy No. B)
C	About 0.010-0.10	0.05-0.3	0.09
Si	About 0.05-1	0.01-2.0	0.21
Mn	About 0.5-4.0	1.8-4.0	3.10
P	About 0.03 or less	0.025 or less	0.021
S	About 0.015 or less	0.02 or less	0.005
Al	About 0.01-0.06	0.005-0.10	0.04
N	About 0.007 or less	0.010 or less	--
O	About 0.005 or less	0.006 or less	--
Nb	About 0.01-0.2	0.005-0.05	0.039
Mo	About 0.05-0.5	No more than 1	--

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Cr	About 0.05-1.5	No more than 2	0.15
Fe and impurities	balance	balance	balance

Because Toyooka '782 teaches that N and O are limited to overlapping amounts, the composition of steel No. B establishes a prima facie case of obviousness for the claimed composition.

Regarding the compositional equations, Alloy B of Toyooka '782 meets the limitations of the claims.

Regarding the broad alloy composition, Toyooka '782 does not teach wherein the composition satisfies the equations (1) and (2) as claimed. However, it is well settled that there is no invention in the discovery of a general formula if it covers a composition described in the prior art, *In re Cooper and Foley* 1943 C.D. 357, 553 O.G. 177; 57 USPQ 117, *Taklatwalla v. Marburg*, 620 O.G. 685, 1949 C.D. 77, and *In re Pilling*, 403 O.G. 513, 44 F(2) 878, 1931 C.D. 75. In the absence of evidence to the contrary, the selection of the proportions of elements would appear to require no more than routine investigation by those of ordinary skill in the art. *In re Austin, et al.*, 149 USPQ 685, 688. In the instant case, Toyooka '782 teaches a steel with an overlapping compositional range, and it would have been obvious to one of ordinary skill in the art at time of invention to have made a composition satisfying the equations (1) and (2), because Toyooka '782 teaches the same utility over the entire range of composition.

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Toyooka '782 teaches that the microstructure of the steel tube contains bainite and ferrite, or a mixed structure of bainite/martensite and ferrite (see [0009]). More specifically, Toyooka '782 teaches that tube 15 comprises alloy B steel and has a structure of martensite, bainite and ferrite, with ferrite comprising 7% of the structure (see Table 2). The microstructure of the tube of Toyooka '782 thus overlaps the claimed microstructure, establishing a prima facie case of obviousness. Toyooka '782 further teaches that the yield ratio for tube 15 is 66% (see Table 2), falling within the range as claimed and establishing a prima facie case of obviousness.

Regarding claim 8, Toyooka '782 teaches that the composition may include Ni at no more than 1%, Cu at no more than 1%, V at no more than 0.5%, Ti at no more than 0.2%, B at no more than 0.003%, and Ca at no more than 0.01% (see [0031]-[0037]). Each of the ranges for the compositional elements overlaps the claimed ranges, establishing a prima facie case of obviousness.

Regarding claim 9, Toyooka '782 is applied to the claim as stated above. The examiner notes further that Alloy B of Toyooka '782 meets the limitations of equations 3 and 4.

Regarding claim 15, Toyooka '782 is applied to the claim as stated above. Toyooka '782 teaches that the steel tube may be formed by seamless processing, as by the Mannesmann process (see [0049]). Toyooka '782 teaches that the steel tube is then rolled at a finish temperature of no more than 800°C (see [0050]-[0052]), overlapping the claimed temperature range and establishing a prima facie case of

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obviousness. Additionally, the steel tube 15 is rolled with a finish temperature of 750°C, which overlaps the instantly claimed range of “about 800°C or more.”

Regarding claim 16, Toyooka '782 teaches that the steel is heated between Ac_1 and Ac_3 (see [0050]). Toyooka '782 does not explicitly teach that the hold time (soak time) is 5 minutes or more. However, Toyooka '782 teaches that the cooling may be air cooling from this temperature (see [0054]), and thus, the time it took the tube to cool from the soak temperature to Ac_3 would have overlapped the claimed range naturally. Additionally, this time is not believed to materially affect the process; as long as the heating in the tube is uniform, the time limit for the heating at between Ac_1 and Ac_3 is not believed to materially affect the properties of the tube.

Regarding claim 17, Toyooka '782 is applied to the claim as stated above.

5. Claims 7-9 and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Canadian document CA 2008853 (hereinafter “von Hagen”), either alone or alternatively, in view of either of Toyooka or US 4,437,902 (hereinafter “Pickens”).

Regarding claim 7, the terms “expandable” and “oil country” are statements of intended use for the pipe claimed (see discussion above). In the instant case, von Hagen teaches that the tubes may be used for oil-field applications (see Field of the Invention).

von Hagen teaches the invention substantially as claimed. von Hagen teaches a high-strength seamless steel tube (see Field of the Invention). von Hagen teaches that the steel composition includes aluminum and/or silicon (see Summary of the Invention).

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von Hagen teaches that the steel composition overlaps the instantly claimed composition (see Summary of the Invention). von Hagen further teaches a specific example of a steel with overlapping composition (see p. 9). The composition of von Hagen is compared with the claimed composition in the chart below (all values in mass or weight percent).

Element	Claim 1	von Hagen (broad alloy)	von Hagen (example)
C	About 0.010-0.10	0.08-0.13	0.09
Si	About 0.05-1	?	?
Mn	About 0.5-4.0	1.40-1.90	1.5
P	About 0.03 or less	Max. 0.020	0.016
S	About 0.015 or less	Max. 0.010	0.003
Al	About 0.01-0.06	?	?
N	About 0.007 or less	--	--
O	About 0.005 or less	--	--
Nb	About 0.01-0.2	At most 0.04	0.04
Mo	About 0.05-0.5	--	--
Cr	About 0.05-1.5	0.20-0.50	0.25
Fe and impurities	balance	balance	balance

The examiner notes that von Hagen does not specify amounts of Si, Al, N or O in the steel.

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With regard to the amounts of N and O in the steel, von Hagen does not teach that these elements are present in either of the broad alloy or the example, thus reading on the claimed amounts. In the alternative, the elements of N and O are well known as impurity elements in the steel, and the purification of the steel and removal or minimization of these elements would have been *prima facie* obvious to one of ordinary skill in the art. Applicant is further directed to MPEP 2144.04 VII.

Although von Hagen explicitly teaches that the steel is alloyed (“annealed”) with aluminum and/or silicon (see Summary of the Invention or claim 1), von Hagen does not describe the amounts of these elements. However, the functions of aluminum and silicon as deoxidizing elements is so well known in the art that the purpose of adding these elements to the steel (deoxidizing or “killing” the steel) would have been known to one of ordinary skill in the art at time of invention, and the amounts of these elements effective to kill the steel would have been optimized by one of ordinary skill in the art through routine investigation. Applicant is further directed to MPEP 2144.05.

In the alternative, the function of said elements is well described elsewhere in the art. For example, Toyooka teaches a steel pipe having good strength and ductility (see abstract), and with a composition overlapping the instantly claimed composition (see cols. 5 and 7-9 and prior Office action). Toyooka teaches that silicon is a deoxidizing element, and aluminum provides a grain refining effect (see cols. 6-7). Further, Toyooka teaches that the N combines with aluminum to refine grains, but too much N lowers ductility (see col. 8), and that O is not desirable in steel due to the formation of oxides (see col. 8). Toyooka teaches that silicon, aluminum, nitrogen and oxygen are

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each regulated to amounts overlapping the claimed ranges (see cols. 6-7 and col. 8 and prior Office action).

It would have been obvious to one of ordinary skill in the art at time of invention to have made the seamless steel tube of von Hagen, and to have regulated Si, Al, N and O to the amounts taught by Toyooka, in order to deoxidize and grain refine the steel (in the case of Al, Si and N), and to avoid reducing the ductility of the steel or forming undesirable oxides (in the case of N and O).

Also in the alternative, Pickens teaches a dual-phase steel with ferrite and martensite (see col. 1). Pickens teaches that the steel has a composition similar to the claimed composition, including overlapping amounts of C, Mn, Si, Al, and Mo (see col. 3). Pickens teaches that the steel is killed as desired by addition of Al or Si, as is known in the art (see col. 4). Pickens further teaches that aluminum killing improves the yield behavior of the steel (see col. 4), and that silicon acts as a ferrite stabilizer and improves tensile strength (see col. 7).

It would have been obvious to one of ordinary skill in the art at time of invention to have made the seamless steel tube of von Hagen, and to have regulated Si, and Al to the amounts taught by Pickens, in order to kill the steel, improve yield behavior, and stabilize ferrite, as taught by Pickens.

von Hagen does not teach wherein the composition satisfies the equations (1) and (2) as claimed. However, it is well settled that there is no invention in the discovery of a general formula if it covers a composition described in the prior art, *In re Cooper and Foley* 1943 C.D. 357, 553 O.G. 177; 57 USPQ 117, *Taklatwalla v. Marburg*, 620

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O.G. 685, 1949 C.D. 77, and *In re Pilling*, 403 O.G. 513, 44 F(2) 878, 1931 C.D. 75. In the absence of evidence to the contrary, the selection of the proportions of elements would appear to require no more than routine investigation by those of ordinary skill in the art. *In re Austin, et al.*, 149 USPQ 685, 688. In the instant case, von Hagen teaches a steel with an overlapping compositional range, and it would have been obvious to one of ordinary skill in the art at time of invention to have made a composition satisfying the equations (1) and (2), because von Hagen teaches the same utility over the entire range of composition.

Regarding the microstructure of the steel, von Hagen teaches that the steel substantially comprises bainite with up to 10% of ferrite (see page 8), said microstructural range overlapping the range as claimed and establishing a prima facie case of obviousness for that range.

Regarding the yield ratio, von Hagen teaches that the yield ratio is less than 80% in all cases (See p. 9), overlapping the claimed range. Further, von Hagen teaches at least one example of a steel meeting the claimed limitation of yield ratio at a catch temperature of around 350 C (see p. 9 and Fig. 1). Still further, von Hagen teaches that the tensile strength tends to decrease (and thus the YR tends to increase) for increasing catch temperature (see Fig. 1 and p. 9). Thereby, the yield ratio of the steel would have been optimized by one of ordinary skill in the art through routine investigation. Applicant is further directed to MPEP 2144.05.

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Regarding claim 8, von Hagen further teaches that the steel may contain 0-0.70% Ni, 0-0.40% Cu, or 0.04-0.13% V (see page 5), each overlapping the claimed ranges and establishing a prima facie case of obviousness for the ranges.

Regarding claim 9, von Hagen is applied to the claim as stated above. In the instant case, von Hagen teaches a steel with an overlapping compositional range, and it would have been obvious to one of ordinary skill in the art at time of invention to have made a composition satisfying the equations (3) and (4), because von Hagen teaches the same utility over the entire range of composition.

Regarding claim 15, von Hagen is applied to the claim as stated above. von Hagen teaches that the steel is heated to 1120-1280 C and hot rolled (see pp. 5-6 and claim 1). Thus, the finish temperature would have been in the range as claimed, due to the high start temperature. Applicant is further directed to MPEP 2112.01.

Regarding claim 16, von Hagen teaches that the steel after hot rolling is cooled from above A_{c3} to 340-560 C (see p. 6 and claim 1). von Hagen does not teach that the steel is held between A_{c1} and A_{c3} for 5 minutes or more. However, this time is not believed to materially affect the process; as long as the heating in the tube is uniform, the time limit for the heating at between A_{c1} and A_{c3} is not believed to materially affect the properties of the tube, and the process would have been obvious to one of ordinary skill in the art.

Regarding claim 17, von Hagen is applied to the claim as stated above.

Response to Arguments

6. Applicant's arguments with respect to claims 7, 9 and 15 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHRISTOPHER KESSLER whose telephone number is (571)272-6510. The examiner can normally be reached on Mon-Fri, 9-5.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ Roy King/
Supervisory Patent Examiner, Art
Unit 1733

csk